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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,274	12/31/2003	Masanori Minamio	60188-692	6600
20277	7590	11/03/2005	EXAMINER	
MCDERMOTT WILL & EMERY LLP			WILLIAMS, ALEXANDER O	
600 13TH STREET, N.W.			ART UNIT	
WASHINGTON, DC 20005-3096			PAPER NUMBER	
			2826	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary

Application No.

10/748,274

Applicant(s)

MINAMIO ET AL

Examiner

Alexander O. Williams

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2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/230297.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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Serial Number: 10/748274 Attorney's Docket #: 60188-692
Filing Date: 12/31/03; claimed foreign priority to 12/5/01

Applicant: Minamio et al.

Examiner: Alexander Williams

Applicant's RCE filed 9/30/05 has been acknowledged.

Applicant's Amendment filed 9/30/05 has been acknowledged.

Claims 6-9 have been canceled.

This application is a divisional application of serial number 10/230297, filed 8/29/02.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/230297, filed on 8/29/2002.

The disclosure is objected to because of the following informalities: Applicant's related application information should be updated.

Appropriate correction is required.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Initially, and with respect to claims 1 and 10, note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Fitzgerald, 205 USPQ 594, 596 (CCPA); In re Marosi et al., 218 USPQ 289 (CAFC); and most recently, In re Thorpe et al., 227 USPQ 964 (CAFC, 1985) all of which make it clear that it is the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that, as here, an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that Applicant has burden of proof in such cases as the above case law makes clear.

Claims 1, 2, 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimanuki (U.S. Patent Application Publication # 2003/0001249 A1).

1. Shimanuki (figures 1 to 64) specifically figures 40 and 41 show a resin-encapsulated semiconductor device, comprising: a die pad **5** provided by removing a whole lower portion (**bottom portion of 5**) of a part of a lead frame that is to serve as the die pad; a semiconductor chip **8** mounted on the die pad; a plurality of leads **2**, each lead being provided by removing a whole upper portion (**2e,2f**) of a part the lead frame that is to serve as the lead; a connection member **10** for connecting the semiconductor chip and the lead with each other; a plurality of suspension leads **4** connected to the die pad; and an encapsulation resin **11** for encapsulating therein the die

pad, the semiconductor chip, the leads, the connection member and the suspension leads, with a bottom surface and an outer side surface of each lead (**any portion of the leads outside of the resin 11**) being exposed as an external terminal, wherein: an upper surface (**top of 5**) of the die pad is located higher than an upper surface (**top of 2**) of the lead; a lower surface (**bottom of 5**) of the die pad is located higher than a lower surface (**bottom of 2**) of the lead; and the suspension leads are not bent. Note: The Examiner is interested in finding the final structure claimed by Applicant. The steps performed to get to the final claimed structure in given little weight in the examination of the claims. For example, instead of removing the lower portion of the die pad, the die pad could have been formed in a mold that did not have a lower portion. For example, instead of removing the upper portion of the lead, the upper lead could have been formed in a mold that already had the lead portion formed with whole already in them.

2. The resin-encapsulated semiconductor device of claim 1, Shimanuki show wherein: the semiconductor chip is mounted with its principal surface facing up (**top of 8**); and the connection member is a thin metal wire.

5. The resin-encapsulated semiconductor device of claim 1, Shimanuki show wherein at least a portion of each of the die pad and the lead has a thickness of 100 micrometers to 150 micrometers (**page 12, paragraph [0192]**). Note that the specification contains no disclosure of either the critical nature of the claimed dimensions or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

As to the grounds of rejection under section 103, see MPEP § 2113.

Claims 1, 2, 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi (Japan Patent # 11-260990).

1. Yamaguchi (figures 1 to 20) specifically figures 1 and 14 show a resin-encapsulated semiconductor device, comprising: a die pad **13** provided by removing a whole lower portion **13b** of a part of a lead frame that is to serve as the die pad; a semiconductor chip **15** mounted on the die pad; a plurality of leads **18**, each lead being provided by removing a whole upper portion **12** of a part of the lead frame that is to serve as the lead; a connection member **16** for connecting the semiconductor chip and the lead with each other; a plurality of suspension leads **14,45** connected to the die pad; and an encapsulation resin **17** for encapsulating therein the die pad, the semiconductor chip, the leads, the connection member and the suspension leads, with a bottom surface and an outer side surface of each lead being exposed as an external terminal, wherein: an upper surface of the die pad is located higher than an upper surface of the lead; a lower surface of the die pad is located higher than a lower surface of the lead; and the suspension leads are not bent. Note: The Examiner is interested in finding the final structure claimed by Applicant. The steps performed to get to the final claimed structure in given little weight in the examination of the claims. For example, instead of removing the lower portion of the die pad, the die pad could have been formed in a mold that did not have a lower portion. For example, instead of removing the upper portion of the lead, the upper lead could have been formed in a mold that already had the lead portion formed with whole already in them.

2. The resin-encapsulated semiconductor device of claim 1, Yamaguchi show wherein: the semiconductor chip is mounted with its principal surface facing up; and the connection member is a thin metal wire.
4. The resin-encapsulated semiconductor device of claim 1, Yamaguchi show wherein at least a portion of the semiconductor chip **15** overlaps with the lead **12** as viewed from above (see figure 14).

As to the grounds of rejection under section 103, see MPEP § 2113.

Claims 1, 3, 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (U.S. Patent # 6,661,087 B2).

1. Wu (figures 1 to 7) specifically figure 4 show a resin-encapsulated semiconductor device **3**, comprising: a die pad **31** provided by removing a whole lower portion of a part of a lead frame that is to serve as the die pad; a semiconductor chip **33** mounted on the die pad; a plurality of leads **32**, each lead being provided by removing a whole upper portion of a part of the lead frame that is to serve as the lead; a connection member **34** for connecting the semiconductor chip and the lead with each other; a plurality of suspension leads (**not labeled but shown in figure 2A**) connected to the die pad; and an encapsulation resin **35** for encapsulating therein the die pad, the semiconductor chip, the leads, the connection member and the suspension leads, with a bottom surface and an outer side surface of each lead being exposed as an external terminal, wherein: an upper surface of the die pad is located higher than an upper surface of the lead; a lower surface of the die pad is located higher than a lower surface of the lead; and the suspension leads are not bent. Note: The Examiner is interested in

finding the final structure claimed by Applicant. The steps performed to get to the final claimed structure in given little weight in the examination of the claims. For example, instead of removing the lower portion of the die pad, the die pad could have been formed in a mold that did not have a lower portion. For example, instead of removing the upper portion of the lead, the upper lead could have been formed in a mold that already had the lead portion formed with whole already in them.

3. The resin-encapsulated semiconductor device of claim 1, Wu show wherein: the semiconductor chip is mounted with its principal surface facing down; and the connection member is a bump **34** made of a metal.

4. The resin-encapsulated semiconductor device of claim 1, Wu show wherein at least a portion of the semiconductor chip overlaps with the lead **32,322** as viewed from above.

As to the grounds of rejection under section 103, see MPEP § 2113.

Response

Applicant's arguments filed 9/30/05 has been fully considered, but are moot in view of the modified grounds of rejections detailed above. Applicant's arguments on pages 4 to 7 have not been found to be persuasive. Webster dictionary defines "whole" as containing all components or constituents; not divided or disjoined; constituting the full amount, extent or duration; all the components of a thing. The Examiner is interested in finding the final structure claimed by Applicant. The steps performed to get to the final claimed structure in given little weight in the examination of the claims. In claim 1, Applicant claims "a die pad provided by removing a whole lower portion of a part of a lead frame that is to serve as the die pad." First, instead of removing the lower portion of the die pad,

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the die pad could have been formed in a mold that did not have a lower portion. Secondly, instead of removing the upper portion of the lead, the upper lead could have been formed in a mold that already had the lead portion formed with whole already in them. Finally, a die pad provided by removing a whole lower portion of a part of a lead frame that is to serve as the die pad. Give, that the mold is not formed already removed, the prior art of Shimanuki and Yamaguchi does remove a whole lower portion of a **part** of a lead frame of the die pad. This language can mean, a part or segment of the lead frame. This part or segment can be the part with the groove or part removed. The whole part of this segment or part is removed. Therefore, the prior art of record still reads on the outstanding rejection as detailed above.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/684,796,696,698,874,786,678,692,693,676,666,787	1/11/05 6/22/05 10/30/05
Other Documentation: foreign patents and literature in 257/684,796,696,698,874,786,678,692,693,676,666,787	1/11/05 6/22/05 10/30/05
Electronic data base(s): U.S. Patents EAST	1/11/05 10/30/05

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander O Williams whose telephone number is (571) 272 1924. The examiner can normally be reached on M-F 6:30-7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272 1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexander O Williams
Primary Examiner
Art Unit 2826

AOW
10/31/05